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ORIGINAL ARTICLE

The Effect of Knowledge Gained in Biology Education on Daily Habits

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ABSTRACT

This research aims to examine the effects of the knowledge gained in biology education on the daily habits of university students. Phenomenological design, one of the qualitative research designs, was used in the research. Participants were selected through criterion sampling, including 12 students (6 females, 6 males) from a state university in Turkey in 2023–2024. Data were collected through a semi-structured interview form and analyzed using content analysis. The codes, themes, and subthemes in the research were created based on the answers given to the questions in the semi-structured interview form. As a result of the research, the codes with the highest frequency were determined to be developing disease-preventing habits (n = 6), lack of technological devices (n = 6), and healthier nutrition (n = 6). The analyses revealed that students gained awareness in various areas of life through biology education, developed behavioral changes, and increased their orientation to healthy living. In this context, the study is of significant theoretical and practical value, demonstrating that biology courses are not merely about transferring knowledge; they also offer tangible contributions to students' individual quality of life. Furthermore, the effectiveness of the knowledge acquired in biology courses in developing healthy living habits is demonstrated, emphasizing that education should not be limited to cognitive gains but should also consider the behavioral dimension.

KEY WORDS: Biology education; content analysis; daily habits; phenomenological design; qualitative research

INTRODUCTION

The most important feature and effect of basic sciences are that the results can be applied in many areas and in daily life (Mercan et al., 2019). Although the topics in biology education are abstract, they are very suitable for being associated with daily life (Cabbar and Şenel, 2020). In biology classes, students learn about their own bodies, their environment, and many events that occur in nature. Therefore, it is not enough to present this information only theoretically; students should also be taught how to apply this information to their daily lives (Berkant, 2002). A TV commercial promoting a vaccine, drug, or product can be an effective tool to emphasize the applications of biology in society. This type of commercial allows a lesson to be started to learn the biological principles used in the development of the product. While students analyze the commercial and evaluate whether or not they will use the product, they can see how they can apply the information they learn in class to their decisions in their daily lives and make this information a habit (Chamany et al., 2008). The individual's interaction with their environment leads to a continuous behavioral change through learning and repetition. Learning is considered a result of life by some researchers. The traces left on the individual by environmental interactions are an important part of the learning process (Erden and Akman, 2003). This process clearly reveals the effects of the knowledge gained on habits and how these habits can shape individuals' lifestyles. Habits help people understand how they interact with the world and transform their environment to achieve their goals (Garrison, 2002). Thus, biological knowledge becomes more meaningful and applicable by being integrated into daily life. Through biology education practices, it is aimed for students to effectively apply the knowledge they gain at school by associating it with events in their daily lives (Enginar et al., 2002). According to Kiziroğlu (1988), biological issues and problems constitute an important part of daily life. Applied biology issues such as biotechnology, ecology, environmental sciences, breeding studies, pest control, and human and animal behavior are areas that concern all segments of social life and affect people's daily activities. According to Berkant (2002), when a teacher transfers biological knowledge without interpreting it and presenting daily life examples, it is not possible for students to develop causal and logical thinking skills. This often results in memorization. Furthermore, given that biology topics are frequently in the news, it is important to ensure that students make connections between what they learn in class and what they encounter in their daily lives (Chamany et al., 2008).

LITERATURE REVIEW

When the literature is examined, it is seen that many studies have been conducted to determine the level of students' ability to relate the knowledge they acquire in classes to daily events (Andree, 2005; Gürses et al., 2004; Himschoot, 2012; İlkörücü-Göçmençelebi and Özkan, 2010; Köse and Gül,

2016; Yüzbaşıoğlu and Atav, 2004). For example, Pekdağ et al. (2013) examined the level of university students' ability to relate the chemistry knowledge they acquire to daily life and the effect of academic success on this level. According to the results of the research, it was found that the level of students' ability to relate their chemistry knowledge to daily life was at a moderate level. In the study conducted by Köse and Gül (2016), it was found that the skills of classroom teacher candidates to relate their biology knowledge to daily life were insufficient. Although these findings suggest that there may be significant differences among students, when looking at the studies conducted, it appears that the information does not reflect long-term behavioral effects.

In addition, Mercan et al. (2019) examined the ability of biology teacher candidates to relate the scientific knowledge they acquired throughout their education process to their daily lives. As a result of the research, it was found that biology teacher candidates can largely relate their scientific knowledge to their daily lives. However, such studies generally focus on short-term association skills and do not assess whether this information becomes a permanent habit.

Similarly, in the study conducted by Wyner and DeSalle (2020), a qualitative content analysis of case studies in environmental science textbooks was conducted, and how these studies depicted humanity's connection with daily life was examined. The study revealed that case studies were generally vague and insufficient in terms of data, described human impacts without connecting to ecological foundations, and daily life connections were often missing. However, when the subject was examined in terms of the effect of the knowledge gained in biology education on daily habits, no study was found in the literature. Associating with daily life examines how students associate the information they gain in biology courses with daily events. On the other hand, this research offers an approach to understanding the effects of information on students' long-term habits. In particular, it evaluates how the information students learn in biology courses changes their daily habits and how this information affects their behaviors. In this context, the effects of knowledge acquired in biology courses on students' concrete behaviors and habits, such as health, nutrition, sleep, and technology use, have not yet been comprehensively investigated. This study aims to fill a significant research gap in this area and is anticipated to make an original contribution to the literature by revealing how biology education impacts students' quality of life and habits, not just cognitive gains.

In conclusion, it appears possible to make biology education more effective and provide tangible contributions to students' daily lives. In this regard, this research is expected to reveal the application areas of biology knowledge based on student opinions and its implications for educational processes, thereby contributing to the development of educational strategies and teaching methods, thus filling a gap in the existing literature. This research aims to examine the effects of the information gained in biology education on the daily habits of university students. In this context, the problem statement of the research was determined as "What are the effects of biology education on the daily habits of university students?" Answers were sought for the following problems, depending on this basic purpose:

1. What are your views on the effects of the information you learned in biology classes on your eating habits?
2. What are your views on the effects of the information you learned about biological rhythms in biology classes on your sleeping habits?
3. What are your views on the biological effects of technology use in biology classes on your daily technology use habits?
4. What are your views on the effects of the information you learned about disease prevention and immune system strengthening in biology classes on your daily habits?
5. How did the information you learned in biology classes affect your plant or animal care habits? What are your views?
6. What are your views on how the health information you received in biology classes affects your habits in your daily life?
7. What are your views on how the information you learned in biology classes affects your movement and exercise habits?

RESEARCH METHOD

In this study, which examines the effects of knowledge gained in biology education on the daily habits of university students, the qualitative research method was adopted. Qualitative research focuses on understanding a research question by addressing it from a humanistic or idealistic perspective. This method is used to deeply understand people's beliefs, experiences, attitudes, behaviors, and interactions (Pathak et al., 2013). This method analyzes data from direct field observations, in-depth, open-ended interviews, and written documents (Patton, 2005). There are various designs in qualitative research, such as cultural analysis, grounded theory, case study, action research, and phenomenology (Görgüt & Güzel, 2023). In this study, the phenomenological design, one of the qualitative research methods, was used. This design focuses on phenomena that we notice but do not have a detailed and deep idea about (Yıldırım & Şimşek, 2016). Studies that reveal individuals' lives, knowledge, and experiences on a subject or phenomenon are described as phenomenology studies (Seggie and Bayyurt, 2017).

Participants

The participants in the study were determined using the criterion sampling method, which is one of the purposeful sampling methods. In this sampling, important criteria that should be taken into consideration for selection are determined. The sample selected according to the determined criteria is considered to adequately represent all the characteristics of the research universe (Tavşancıl and Aslan, 2001). In this method, certain criteria such as the students' volunteering to participate in the study, the balanced gender distribution, and

the fact that they have taken the biology course in the past and are currently taking this course were taken into consideration. A total of 12 participants who met these criteria were included in the study. As a result, this study was conducted with a total of 12 university students, 6 females and 6 males, studying at a state university in Turkey in 2023–2024.

Data Collection Tool and Process

In collecting the research data, a semi-structured interview form was used as a data collection tool in accordance with qualitative research methods. This form was prepared by the researcher in order to determine the effect of the information obtained from biology education on the daily habits of university students. Before creating the questions, the national and international literature on the subject was examined in detail. This semi-structured interview form consists of 7 questions aimed at determining the effects of biology education on the daily habits of the students. To evaluate the validity of the prepared questions, opinions were obtained from three faculty members, two of whom are experts in biology education and the other in the Turkish language. The pre-test of the interview questions was conducted with two students, and the form was finalized according to the feedback obtained from these processes and applied to the participants. In semi-structured interviews, a certain series of pre-planned questions are asked and the determined topics are focused on. While the interviewer has the authority to end the interview when necessary, the questions are usually directed to each participant in a systematic way, and this process progresses in a predictable way (Berg and Lune, 2015). In qualitative research, validity and reliability are achieved by meeting criteria such as consistency, verifiability, credibility, and transferability (Merriam, 2015; Uslu, 2022). In this study, participants' opinions were recorded directly without any intervention to ensure consistency.

To increase the credibility of the research, all processes were explained transparently, the feedback was received from experts for verifiability, and pilot studies were conducted. To increase the reliability of the research, participants were informed about the purpose and content of the research before the interview. It was conveyed to the participants that their answers would be protected within the framework of the principle of confidentiality and that the data would be used only for scientific purposes. In addition, it was emphasized that every step in the research process would be meticulously checked. In these interviews, based on volunteering, care was taken to ensure that the data were handled objectively and accurately reflected the topic being researched. The interviews lasted an average of 35 min, the interviews were recorded with a voice recorder, and the participants' statements were transferred to a Word file as is. The opinions of each participant were coded as "S1, S2, S3." and it was clearly stated which statement belonged to which participant.

Data Analysis

The data collected during the research process were examined using the content analysis method. In this method, data showing similar characteristics are collected and organized around determined themes and codes, and then analyzed by structuring them in a way that the reader can easily understand (Yıldırım and Şimşek, 2013). In the research, codes, themes, and subthemes were created based on the answers given to the questions in the semi-structured interview form. This structure was used to systematically analyze the data and clearly reveal the effect of biology education on daily habits. The analysis process was structured as follows: First, the participants' opinions were coded based on similar expressions, then these codes were categorized according to their similarities, and subthemes and themes were created. In particular, each theme was determined based on the common points that the participants mentioned, and these themes were divided into more specific subthemes. The codes were determined in a way that showed how much the opinions expressed by the participants were emphasized on a certain subject, and which concepts were repeated more frequently. The data of the students who participated in the pilot application were excluded from the analysis, and the semi-structured interviews were analyzed by taking into account the opinions of the main participant group. In addition, after the determination of themes and sub-themes, the opinions of the participants were reviewed again, and finally, frequency tables expressing the frequencies of codes, sub-themes, and themes were created, and the results were presented by adding direct quotes for each theme.

To increase the reliability of the analysis process, the coding process was conducted independently by the researcher and an expert biology instructor. Coding results were compared to ensure consistency and consensus. Intercoder agreement was calculated using the formula suggested by Miles and Huberman (1994): (Percentage of Agreement = Agreement/[Agreement + Disagreement] × 100). According to Miles and Huberman (1994), 89% agreement was achieved between coders, demonstrating the high reliability of the analysis process. Furthermore, expert review was conducted to ensure the validity of the data, providing additional verification of the rigor and accuracy of the research process (Merriam, 2015). These methods are widely used for reliability and validity, particularly in case studies and phenomenological research.

RESULTS

The findings of the study were arranged in accordance with the order of the questions in the interview form, and as a result of the data analysis, meaningful themes, subthemes, and codes were created. These codes were analyzed by sorting them according to their frequency values.

When Table 1 is examined, the participants' responses to the question "What are your views on the effects of the information you learn in biology courses on your nutritional habits?" and the coding process resulted in three subthemes: "Paying Attention to Eating and Drinking," "Awareness and Change with Education," and "Educational Ineffectiveness." Within the framework of these subthemes, the codes with the highest

Table 1: What are your views on the effects of the information you learned in biology classes on your eating habits?

Theme	Sub-theme	Code	Frequency
Healthy Nutrition and Conscious Choices	Pay Attention to Eating and Drinking	Healthy Choice	3
		Attention	2
		Organic product preference	1
	Awareness and Change through Education	Habit Change	4
		Awareness	4
		Food effects	3
Negative Impact	Training Ineffectiveness	Fast Food	2
		Irregular Diet	2
		Ineffectiveness	1

frequency stand out as "Habit Change" (n = 4), "Healthy Choice" and "Food Effects" (n = 3), respectively. Some sample statements regarding the participants' opinions are given below.

"I didn't have any eating habits before the lesson, I learned that, but now I have eating habits with the information I got from the lesson." (S5)

"I pay more attention to what I eat and drink." (S8)

"Yes, I know what I learned in the lessons, but I still prefer fast food, there hasn't been much change." (S7)

When Table 2 is examined, it can be seen that the participants' responses to the question "What are your views on the effects of the information you learned about biological rhythms in biology classes on your sleep habits?" and the coding process resulted in the identification of two subthemes: "Sleep Patterns and Habits" and "Awareness and Education Effects". Within the framework of these subthemes, the codes with the highest frequencies are "Regulating sleep habits" (n = 5) and "No effect/No change" (n = 4), respectively. Some sample statements regarding the participants' views are given below.

"It helped me regulate my sleep habits." (S10)

"It doesn't really have an effect because I still sleep late." (S8)

I learned how much sleep the body needs and accordingly I managed to regulate my sleep." (S4)

"Yes, learning about biological rhythms helped, but I still continue with my old habits." (S2)

When Table 3 is examined, the participants' responses to the question "What are your views on the biological effects of technology use in biology classes on your daily technology use habits?" and the coding process have determined three subthemes: "Technology and Biological Effects," "Technology Use in Education," and "Access to Technology." Within the framework of these subthemes, the codes with the highest frequency stand out as "Lack of technological tools" (n = 6) and "Visual and video-supported learning" (n = 5), respectively. Some sample statements regarding the participants' views are presented below.

"When I see such conveniences, I try to solve our problems directly with technological devices in our daily lives." (S5)

Table 2: What are your views on the effects of the information you learned about biological rhythms in biology classes on your sleep habits?

Theme	Sub-theme	Code	Frequency
The Effect of Biological Rhythm	Sleep Patterns and Habits	Regulating sleep habits	5
		No effect/No change	4
	Awareness and Education Effect	Understanding and regulating sleep needs	3
		Information to create awareness	3

Table 3: What are your views on the effects of what you learned about the biological effects of technology use in biology classes on your daily technology use habits?

Theme	Sub-theme	Code	Frequency
The Effect of Biological Rhythm	Patterns Sleep and Habits	Regulating sleep habits	5
		No effect/No change	4
	Awareness and Education Effect	Understanding and regulating sleep needs	3
		Information to create awareness	3
Biological Effects of Technology Use	Technology and Biological Effects	Reducing technology use	4
		Being aware of its impact	3
		Screen Time Management	1
	Access to Technology	Lack of technological tools	6
		Not using technology	3
	Use of Technology in Education	Visual and video-supported learning	5
		Problem-solving with technological tools	2

"Since our technological devices are limited in our classes, it was not possible for us to use technological devices and gain knowledge." (S3)

"We did not use technology." (S9)

When Table 4 is examined, the participants' responses to the question "What are your views on the effects of the information you learned in biology classes about preventing diseases and strengthening the immune system on your daily habits?" and the coding process resulted in three subthemes: "Immune System and Health Habits," "Education and Awareness," and "Preventive Health Behaviors." Within the framework of these subthemes, the codes with the highest frequency stand out as "Developing disease-preventive habits" (n = 6), respectively. Some sample statements regarding the participants' views are presented below.

"In line with what I learned in biology class, in addition to consulting a doctor when I show symptoms of illness, I sometimes try to cope with health problems on my own. The information the class provided me during this process was very useful." (S5)

"In biology class, I learned more about how the immune system works and what factors can strengthen it. This helped me to better protect my body's health." (S1)

When Table 5 is examined, it is seen that the participants' responses to the question "How did the information you learned

in biology classes affect your plant or animal care habits? What are your views?" and the coding process resulted in four subthemes: "Plant Care Habits," "Animal Care Habits," "Awareness," and "Indifference." Within the framework of these subthemes, the code with the highest frequency stands out as "Change in perspective towards plants and animals" (n = 5). Some sample expressions regarding the participants' views are presented below.

"In line with the information I learned in biology class, I learned that plants do not photosynthesize at night, and considering this information, I try to keep my plants in a dark room at night. I also learned that their soil needs to be renewed regularly, so I change their soil at certain intervals and water them on time to ensure that my plants grow healthily." (S6)

"Understanding the life cycle of plants and how plants survive, which we learned in biology class, has made a big change in my perspective. Now, I have developed an awareness that plants need not only water and light, but also the right environment to grow in. With this information, I have a better understanding of how to care for my plants. (S11)

Table 4: What are your views on the effects of the information you learned about disease prevention and immune system strengthening in biology classes on your daily habits?

Theme	Sub-theme	Code	Frequency
Preventing Diseases and Strengthening the Immune System	Immune System and Health Habits	Developing disease-preventive habits	6
	Education and Awareness	Getting information on immunity strengthening	5
		Getting information about immunity and body health	5
	Preventive Health Behaviors	Turning to preventive health services	3
		Acting on your own against diseases	3

Table 5: How Did the Information You Learned in Biology Classes Affect Your Plant or Animal Care Habits? What Are Your Opinions?

Theme	Sub-theme	Code	Frequency
The Effects of Biology Lessons on Plant and Animal Care	Plant Care Habits	Taking care of plants	3
		Understanding the life cycle of plants and taking care of them accordingly	1
	Animal Care Habits	Learning about caring for pets at home	4
	Awareness	Change in perspective towards plants and animals	5
	Indifference	Lack of knowledge or disinterest in care	2

"To be honest, I did not learn much about plant and animal care in biology class, because these topics were not discussed in class. Also, since I have not raised plants or animals in my own life, I did not think much about this subject. I realized that this kind of information did not interest me in the lectures. So I can't say that biology class contributed much to my life in terms of plant and animal care because I didn't have much interest in these subjects anyway and the class didn't provide much information."(S4)

When the data in Table 6 is examined, two sub-themes were determined as a result of the coding process carried out in line with the responses given to the question "What are your views on how the health information you received from biology courses affects your habits in your daily life?" posed to the participants in the study: "Change in Health Habits," "Awareness and Information Acquisition." Within the framework of these sub-themes, the code with the highest frequency stands out as "Healthier nutrition" (n = 6). Some sample expressions regarding the participants' views are presented below.

"After what I learned in biology class, I started eating healthier. I became more careful about the foods I eat, for example, after learning when and what to eat and which foods are beneficial for my body, I choose the amount and variety of food I take more consciously." (S7)

"I have made it a habit to share the health information I learned in biology classes with my family and people around me. I think having accurate information about health is very important not only for our own health but also for protecting the health of others." (S6)

When Table 7 is examined, two sub-themes were determined as a result of the coding process carried out in line with the responses given to the question "What are your views on how the information you learned in biology courses affects your movement and exercise habits?" directed to the participants in the research: "Exercise and Movement Increase," "Change Related to Exercise and Movement." Within the framework

Table 6: What are your views on how the health information you received from biology courses affects your daily life habits?

Theme	Sub-theme	Code	Frequency
The Effect of Health Information Obtained from Biology Courses on Daily Life	Change in Health Habits	Healthier diet	6
		Creating a sleep routine	3
		Exercise habits	1
		Drinking more water	1
	Awareness and Knowledge Acquisition	Genetic disease awareness	3
		Monitoring your own health	2
		Taking precautions before illness	1
		Transferring health information to others	1

Table 7: What are your views on how the information you learned in biology classes affects your movement and exercise habits?

Theme	Sub-theme	Code	Frequency
The Effect of Information Learned from Biology Classes on Movement and Exercise Habits	Increased Exercise and Movement	Habit of exercising after meals	4
		Exercising regularly	3
		Moving more	3
	Changes Associated with Exercise and Movement	Improvement in movement habits	2
		Encouragement of physical activity	2
		No change in exercise habits	1

of these sub-themes, the code with the highest frequency stands out as "Habit of doing exercise after meals" (n = 4). Some sample expressions regarding the participants' views are presented below.

"Some of the information I learned in biology classes, especially the information I gained about the digestive system, taught me that walking after eating is beneficial. Although I used to not do any sports after eating, I now try to keep my digestive system active by walking after meals. In addition, I made exercising a habit based on the information in biology class and I do sports for at least one hour in my daily life." (S2)

"Thanks to the information biology gave me, I increased my daily movement and started to do regular exercise." (S1)

DISCUSSION AND CONCLUSION

One of the main purposes of education is to prepare individuals for life and to enable them to give meaning to daily events. In this context, biology courses are an important tool that helps students understand the nature around them, the relationships in nature, their own bodies, eating habits, and ways to live a healthy life (Köse and Gül, 2016). The purpose of this research is to examine the effects of the information gained in biology education on the daily habits of university students. When the results obtained from the research are examined, it is shown that the information learned in biology courses has a significant effect on the participants' eating habits, sleep patterns, use of technology, precautions against illness, plant and animal care, health habits, and exercise habits, and causes changes. Students stated that the information they learned in biology courses increased their awareness, especially about healthy nutrition. Codes such as "Habit Change" and "Healthy Choice" reveal that the participants started to eat more consciously and showed a tendency to make healthy food choices following biology education. This finding shows that biology education can be an important tool in the development of health awareness. Because the Biology course represents nature, the student may encounter events that occur in his/her own body and environment. This information should not remain theoretical but should be transferred to the student's life. To ensure a balanced diet and create more awareness, it is extremely important to introduce food groups and provide nutrition education (Öztürk, 2021). In addition, according to a study conducted by Sütçü and Yılmaz (2023), it was stated that students who did not choose the biology course graduated from secondary education without reaching all the health-related gains in the program in the following grades, and were quite inadequate in terms of biological foundations related to health. This shows the important role of biology education in acquiring health-related knowledge and skills.

According to another result obtained from the research, some of the participants stated that biology education did not create a change in eating habits under the code of "Educational Ineffectiveness". This situation suggests that individual differences and the variability in the content of the educational process may affect the effectiveness of education. At this point, Özkan (2011) emphasizes that information about their own bodies and health should be conveyed to students in a way that they can cope with daily biological problems in a practical way. Edmondson (2005) stated that science educators should bring daily life problems into the educational environment and organize activities related to the experiences and information that students are accustomed to so that they can have meaningful learning experiences. In this regard, biology teachers' ability to connect lesson plans to students' daily lives can increase their potential to positively influence their health habits. For example, concrete activities such as keeping personal nutrition diaries with students or organizing in-class healthy living workshops can facilitate the practical application of the knowledge learned.

In the study, it was determined that the information learned about biological rhythms also caused changes in the sleep habits of the participants. In particular, the code "Regulating sleep habits" reveals that the information acquired in biology classes about biological rhythms and sleep patterns improved the sleep habits of the participants. In this context, education about sleep is very important, especially for developing healthy sleep habits in students (Sarabia et al., 2008). However, some participants responded with "No effect/No change" in this regard, indicating that biology education did not have an effect on sleep patterns. This difference may depend on the applicability of the information in the education, as well as the personal awareness levels of the participants. In light of these results, biology teachers' use of a "biological rhythm diary" in their classes may contribute to students' analysis of their own sleep habits and their awareness of the change process.

According to the results obtained from the participants who evaluated the effects of the information learned about the biological effects of technology use in biology classes on daily technology use habits, the code "Lack of technological tools" revealed that some participants had difficulties in accessing technology. This situation emphasizes the importance of accessibility to the necessary tools for the efficient use of

technology in education. On the other hand, the code "Visual and video supported learning" shows that supporting biology education with visual and video materials makes students' learning processes more efficient. This finding suggests that the use of technology in education helps students understand abstract and complex subjects, such as biology, better and makes these subjects more understandable. In fact, similarly, Cimer (2012) stated in his study that to make biology learning more effective, students suggested that teachers teach biology using visual materials, conducting practical experiments, associating the subjects with daily life, and making biology teaching interesting. Therefore, systematic use of video-based or simulation-based learning applications in biology courses can make it easier for students to concretize abstract knowledge.

It has been determined that the information about the immune system and health learned in biology classes leads students to review their health habits more carefully. In particular, the code "Developing disease-preventing habits" reveals that participants gained more health awareness thanks to biology education and that this awareness led them to develop healthy habits. With health education, it is necessary to teach students to make decisions, support them in building their self-esteem, and equip them with creativity so that they can seize future opportunities (Pelitoğlu et al., 2013). Therefore, the effect of biology education on health habits is of great importance in terms of providing students with not only academic knowledge but also life skills. However, it is also emphasized that unhealthy lifestyles emerge as a result of insufficient knowledge (Öztürk, 2021). In this context, students can be presented with case scenarios during the course of the topic, and problem-solving-based classroom activities can be implemented. Students can discuss possible solutions based on these scenarios and relate them to their own lives.

The information gained in biology education also changed the participants' perspectives on plant and animal care. The code "Change in perspective on plants and animals" shows that biology courses have an effect on increasing environmental awareness. It can be said that this change has led the participants to have a more responsible and careful attitude towards nature. However, some participants stated that biology courses did not affect them in plant and animal care under the code "Indifference." Regarding this issue, Kahyaoğlu et al. (2008) stated that environmental problems cannot be solved only with technology or laws, and that our habits and individual behaviors must be changed to overcome these problems. Therefore, it was emphasized that determining the interests and attitudes of teacher candidates who will guide our children in the future is of great importance in gaining positive attitudes and behaviors toward the environment. In this context, short-term projects in which students care for a specific plant and observe its growth can increase their sense of environmental responsibility. Furthermore, small-scale collaborations with animal shelters can foster students' empathy and environmental awareness. Such practices can facilitate the translation of biological knowledge into action.

Finally, the information about exercise learned in biology courses has caused a change in the students' movement and exercise habits. The code "Habit of doing exercise after meals" shows that biology education has an effect on increasing exercise habits.

As a result, the current study has revealed that the information gained in biology education creates significant changes in the daily habits of university students. The participants gained awareness of issues such as health, nutrition, sleep, technology use, exercise, and environmental awareness that they learned in biology classes, and showed positive changes in their habits. However, some students stated that biology education did not have an effect on their personal habits. Therefore, it can be said that biology education has the potential to increase the quality of life of students, but this effect can vary depending on individual characteristics and the education process. It can be stated that in order for the information obtained through education to be effective in other areas of life, biology courses should be made more applied and related to life. The following suggestions can be given depending on the results obtained from the study: If discussions are made on real-life examples related to the daily problems that students encounter in biology classes, the information can be made more applicable and interesting. If more examples and information are given about environmental awareness and healthy living habits in biology classes, students can be made more conscious of these issues. In addition, developing personalized education approaches considering individual differences can further strengthen the effect of biology on students' living habits.

ETHICAL APPROVAL

Ethical approval authority was obtained from the Kafkas University Social and Human Sciences Scientific Research and Publication Ethics Committee, Turkey (Issue 61 Approval No: E-34569).

REFERENCES

Andree, M. (2005). *Ways of using Everyday Life in the Science Classroom*. Sweden: Stockholm Institute of Education the Swedish National Graduate School in Science and Technology Education Research.

Berg, B.L., & Lune, H. (2015). Aydın, H, (Trans). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. Konya: Eğitim Yayınevi.

Berkant, H.G. (2002). Ortaöğretim biyoloji derslerinin biyolojik nedenselliğe dayalı olarak işlenmesi. İn: *Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi.* Ankara: ODTÜ.

Cabbar, B.G., & Senel, H. (2020). Content analysis of biology education research that used context-based approaches: The case of Turkey. *Journal of Educational Issues*, 6(1), 203-218.

Chamany, K., Allen, D., & Tanner, K. (2008). Making biology learning relevant to students: İntegrating people, history, and context into college biology teaching. *CBE-Life Sciences Education*, 7(3), 267-278.

Cimer, A. (2012). What makes biology learning difficult and effective: Students' views. *Educational Research and Reviews*, 7(3), 61.

Edmondson, E.W. (2005). *Collaborative Dialogue: Exploring 4th Graders' Discussions of Science*. [Unpublished PhD Thesis]. USA: Clemson University.

Enginar, I., Saka, A., & Sesli, E. (2002). Lise 2 öğrencilerinin biyoloji derslerinde kazandıkları bilgileri güncel olaylarla ilişkilendirebilme

düzeyleri. İn: *Ulusal Fen Bilimler ve Matematik Eğitimi Kongresi*. Ankara: ODTÜ.

Erden, M., & Akman, Y. (2003). *Gelişim ve Öğrenme*. Ankara: Arkadaş Yayınevi.

Garrison, J.W. (2002). Habits as social tools in context. *OTJR: Occupation, Participation and Health*, 22(1 Suppl), 11S-17S.

Görgüt, İ., & Güzel, C. (2023). Classroom teachers' vıews on the concept of faır play. *The Journal of Physical Education and Sport Sciences*, 21(2), 112-129..

Gürses, A., Akrabaoğlu, F., Açıkyıldız, M., Bayrak, R., Yalçın, M., & Ve Doğar, Ç. (2004). *Orta Öğretimde Bazı Kimya Kavramlarının Günlük Hayatla İlişkilendirilebilme Düzeylerinin Belirlenmesi*. XII. Eğitim Bilimleri Kongresi Bildiriler. Vol 4. Ankara: Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, pp. 2173-2197.

Himschoot, A.R. (2012). *Student Perception of Relevance of Biology Content to Everyday Life: A Study in Higher Education Biology Courses*. Minnesota: Capella University.

İlkörücü-Göçmençelebi, Ş., & Özkan, M. (2010). A study of scale development testing elementary school 6th grade students' level of relating the knowledge given in science curriculum with everyday life. *Journal of Uludag University Faculty of Education*, 23(1), 121-132.

Kahyaoğlu, M., Daban, Ş., & Yangın, S. (2008). Attitudes of primary candidate teachers about environmental. *Dicle University Ziya Gökalp Faculty of Education Journal*, (11), 42-52.

Kiziroğlu, İ. (1988) Bıologıeunterrıcht heute und seıne zıelsetzungen. *Hacettepe University Journal of Education Faculty*, 3, 243-250.

Köse, E.Ö., & Gül, Ş. (2016). Primary school student teachers' levels of associating of their biological knowledge with daily life. *Amasya Education Journal*, 5(1), 84-103.

Mercan, G., Gürlen, E., & Köseoğlu, P. (2019). Investigation of biology teacher candidates' with ability to associate status of scientific ınformation. *Journal of Qualitative Research in Education*, 7(1), 320-343.

Merriam, S.B. (2015, 2009). Turan, S., (Ed., Trans). *Nitel Araştırma: Desen ve Uygulama İçin bir Rehber.* 3rd ed. Ankara: Atlas Akademik Basım Yayın Dağıtım.

Miles, M.B., & Huberman, M.A. (1994). *Qualitative Data Analysis: An Expanded Source Book.* California: Sage.

Özkan, N. (2011). The ımportance of bıology educatıon today. *Trakya University Journal of Social Sciences*,13(1), 222230.

Öztürk, A.K. (2021). *Lise Öğrencilerinin Dengeli Beslenme ve Obezite ile İlgili Tutumlarının Belirlenmesi İçin Ölçek Geliştirme-Geçerlik ve Güvenirlik Çalışması* [Master's Thesis, Balıkesir Üniversitesi Fen Bilimleri Enstitüsü].

Pathak, V., Jena, B., & Kalra, S. (2013). Qualitative research. *Perspectives in Clinical Research*, 4(3), 192.

Patton, M.Q. (2005). *Qualitative Research*. New York: John Wiley and Sons, Ltd.

Pekdağ, B., Azizoğlu, N., Topal, F., Ağalar, A., & Oran, E. (2013). the effect of academıc achıevement on the level of assocıatıng chemıstry knowledge wıth everyday sıtuatıons. *Kastamonu Education Journal*, 21(4), 1275-1286.

Pelitoğlu, F., Pelitoğlu, F.Ç., & Özgür, S. (2013). development of a health attitude scale for primary school students. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 7(1), 32-56.

Sarabia, A., Rol, M.Á., & Madrid, J.A. (2008). Teaching chronobiology and sleep habits in school and university. *Journal Compilation*, 2(1), 34-47.

Seggie, N., & Bayyurt, Y. (2017). *Nitel Araştırma Yöntem, Teknik, Analiz ve Yaklaşımlar*. Ankara: Anı Yayıncılık.

Sütçü, E., & Yılmaz, M. (2023). Analysis of the position of the health subject in high school curriculum. *Kocaeli University Journal of Education*, 6(1), 200-219.

Tavşancıl, E., & Aslan, E. (2001). *İçerik Analizi ve Uygulama Örnekleri*. İstanbul: Epsilon Yayıncılık.

Uslu, Ö. (2022). Üniversite öğrencilerinin entelektüel sermaye birikimleri. *Sosyal Bilimlerde Yeni Araştırmalar*. Ankara: Akademik İletişim, pp. 91-105.

Wyner, Y., & DeSalle, R. (2020). An investigation of how environmental science textbooks link human environmental impact to ecology and daily life. *CBE-Life Sciences Education*, 19(4), 1-12.

Yıldırım, A., & Şimşek, H. (2013). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. Ankara: Seçkin Yayınevi.

Yıldırım, A., & Şimşek, H. (2016). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri.* Ankara: Seçkin Yayıncılık.

Yüzbaşıoğlu, A., & Atav, E. (2004). Determınıng students' learnıng level of daıly lıfe bıology subjects. *Hacettepe University Journal of Education Faculty*, 27, 276-285.